

REMARKS

The applicant respectfully requests reconsideration in view of the following remarks.

Support for newly added claim 25 can be found in the original claim 1. No additional fee is required for the extra independent claim added. The application contains a total of 20 claims and three independent claims.

Claims 1-3, 5, and 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setayesh et al. (Bridging the Gap between Polyfluorene and Ladder-Poly-p-phenylene: Synthesis and Characterization of Poly-2,k8-indenofluorene, *Macromolecules*, 2000, 33, 2016-2020) (“Setayesh”) in combination with Reisch (Dissertation, Oligo-und Poly (indenofluorene)..., Mainz, 2000, pp. 27 and 115) (“Reisch”) and Inbasekaran (U.S. 5,777,070) (“Inbasekaran”) and evidences Kim (Assemblies of conjugated polymers. Intermolecular and intramolecular effects on the photophysical properties of conjugated polymers, *Pure Appl. Chem.*, Vol. 74, No. 11, pp. 2031-2044, 2002) (“Kim”). The applicant respectfully traverses this rejection.

Rejections under 35 U.S.C. 103(a)

Claims 1-3, 5, and 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setayesh in combination with Reisch and Inbasekaran and evidenced Kim. Setayesh discloses different homopolymers. One of these homopolymers is a trans-indenofluorene homopolymer.

The Examiner correctly stated at page 6 of the Office Action (“Setayesh teaches homopolymer of Structure I”). Furthermore, at page 6 of the Office Action, the Examiner stated that a comparison of Setayesh’s and Applicants polymers is not correct, due to the fact that Setayesh discloses homopolymers whereas the present application is directed to copolymers.

Reisch on page 115 only discloses a cis-indenofluorene molecule. This molecule is not a monomer and therefore, the applicant cannot see any disclosure how a polymer can be produced starting from this molecule. Even if there would be a disclosure within Reisch how to produce polymers, the result would be again homopolymers.

Therefore, it is stated by the Examiner at the bottom of page 4 of the Office Action, “[b]oth Setayesh and Reisch fail to disclose a second repeat unit in their polymers”. This means that both references fail to disclose copolymers.

From the above-said follows in the applicant’s opinion that the object of the present invention (i.e. copolymers containing cis-indenofluorene units) is not obvious with respect to a combination of Setayesh et al. with Reisch.

Therefore, the Examiner uses a third document (i.e. Inbasekaran). Inbasekaran is directed to a process for preparing conjugated polymers (see the title and abstract). The example (i.e. example 3) cited by the Examiner is a copolymer of fluorene and naphthalene. Even if the name of “fluorene” and “indenofluorene” is similar, both formulae are not comparable with each other with respect to their properties.

As a consequence thereof, the applicant believes that the present invention is also not obvious with respect to a combination of Setayesh with Reisch and Inbasekaran. If such a combination would be obvious it shouldn’t be possible to claim neither polymers nor copolymers because polymers as well as copolymers are already known.

The statement of the Examiner according to which Kim evidences that introducing of cis-linkages in conjugated polymers used in light emitting devices leads to high emission yield (page 4 of the Office Action) is not correct, because in the middle of page 2040 of Kim, it is only stated

that introducing cis-linkage in a PPV also realized high emission yield. PPV is a Poly-Paraphenylene-Vinylene polymer which has nothing to do with the object of the present application.

Therefore, in the applicant's opinion the present invention is not obvious with respect to the cited prior art.

With respect to the working examples of the present application the following should be stated: five different polymers according to the present invention have been synthesized (i.e. Polymers 2 to 5), but only one of these polymers has been tested in an OLED device.

This polymer (i.e. Polymer 5) has been tested together with four different comparative polymers containing different trans-indenofluorene units (i.e. Polymers 6 to 9). These comparative polymers differ in that they contain different trans-units instead of the cis-unit. Polymers 6 to 9 have different properties due to the fact that the trans-indenofluorene units contain different substituents. Therefore these four materials are not directly comparable.

Nevertheless, Polymer 5 and Polymer 6 are directly comparable due to the fact that both polymers only differ in that one contains a cis-unit (example 5) whereas the other contains a trans-unit (example 6). The substituents of both indenofluorene units are identical. Therefore, comparative Polymers are in the applicant's opinion the closest prior art for inventive Polymer 5, which is a preferred embodiment of the present invention. It is noted that 7a of Setayesh is the same as Polymer 6.

As a consequence, the different properties of both polymers could only be based on the difference of both indenofluorene units, which only differ in that one is a cis-configuration whereas the other is a trans-configuration.

Table 1 of the present application (page 20) clearly shows that the inventive Polymer 5 needs a lower voltage V, has a significant lower color shift as well as a significant lower burn-in and also a significant lower change in driving voltage. Only the “half-life” of the trans-indenofluorene is a little bit better than the “half-life” of the cis-indenofluorene.

Therefore, the statement in the present application, that Polymer 5 of the present invention provides the best performance across the range of parameters measured (see page 20 of the applicant’s specification) is correct.

A statement that modifications of the prior art to meet the claimed invention would have been “obvious to one of ordinary skill in the art at the time the invention was made” because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See MPEP § 2143.01 IV. “[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Furthermore, the Examiner cannot selectively pick and choose from the disclosed parameters without proper motivation as to a particular selection. The mere fact that a reference may be modified to reflect features of the claimed invention does not make the modification, and hence the claimed invention, obvious unless the prior art suggested the desirability of such modification. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430 (Fed. Cir. 1990); *In re Fritch*, 23 USPQ2d 1780 (Fed. Cir. 1992). Thus, it is impermissible to simply engage in a hindsight reconstruction of the claimed invention where the reference itself provides no teaching as to why

the applicant's combination would have been obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). For the above reasons, this rejection should be withdrawn.

Claim 25

With respect to claim 25, claim 25 is limited to polymers and not "oligomers and polymers". Therefore, Reisch at page 112 teaches away from claim 25. The applicant believes that claim 25 is also patentable over the prior art. For the above reasons, this rejection should be withdrawn.

In view of the above response, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 14113-00027-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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